

## **AMENDMENTS TO THE CLAIMS**

### **Please amend the claims as follows.**

1. (Currently Amended) A computer-implemented method for determining a production plan comprising:  
  
allocating, by a computing device, resources to different demand priorities by iteratively solving mathematical linear programs[[,]];  
  
optimizing, by said computing device, wherein each mathematical linear program ~~optimizes~~ according to one of a plurality of sets of demand priorities wherein each set contains a plurality of demand priorities[[,]]; ~~and~~  
  
determining, by said computing device, each iterative solution is consistent with using results from a the previous mathematical linear program solution, and  
  
outputting, by said computing device, said production plan based on optimizing said each mathematical linear program and determining each iterative solution.
2. (Currently Amended) The method of claim 1, wherein said demand priorities are hierarchical and comprises two or more levels of hierarchy.
3. (Currently Amended) The method of claim 1, wherein backorder costs penalties are determined independently for each set of demand priorities and ~~comprise a full spectrum range within each set of priorities~~ each successive linear programming model allocates a full range of backorder costs within a priority group to which resources are currently being allocated.

4. (Currently Amended) The method of claim 1, wherein said mathematical linear programs solved in each iteration use the solution to the previous mathematical linear program as a starting ~~point~~ solution.

5. (Original) The method of claim 1, further comprising adding constraints to said mathematical linear programs at each iteration to ensure that solutions to subsequent iterations are consistent with previous solutions.

6. (Original) The method of claim 1, wherein said method uses a different mathematical linear program for each iteration.

7. (Currently Amended) The method of claim 1, wherein said allocating process solves said mathematical linear programs for higher demand priorities before solving for lower priorities.

8. (Original) A computer-implemented method of allocating resources to a hierarchy of demand priorities in a linear programming production planning system for determining a production plan, said method comprising:

aggregating, by said computing device, said demand priorities into different priority groups;

allocating, by said computing device, said resources to the highest priority group of demand priorities using a first linear programming model;

allocating, by said computing device, remaining resources to the next highest priority group of demand priorities using a second linear programming model, wherein said second linear programming model uses results from said first linear programming model; ~~and~~ iteratively repeating said process of allocating remaining resources, by said computing device, to the remaining groups of demand priorities in order of priority; and outputting, by said computing device, a production plan based said processes of allocating resources.

9. (Original) The method in claim 8, wherein when repeating said process of allocating remaining resources, said method uses a different linear programming model for each iteration.

10. (Currently Amended) The method in claim 9, wherein each different linear programming model uses ~~results~~ a program solution of the previous linear programming model.

11. (Original) The method in claim 8, wherein during said allocating processes, each linear programming model fixes variables associated with priority groups that have a lower priority than the priority group to which the resources are currently being allocated.

12. (Original) The method in claim 8, wherein during said allocating processes, each linear programming model allocates the full range of backorder costs within the priority group to which the resources are currently being allocated.

13. (Original) The method in claim 8, further comprising dividing said priority groups into different sub-priority tiers.

14. (Currently Amended) The method in claim 13, wherein said sub-priority tiers can be processed simultaneously ~~or separately~~.

15. (Currently Amended) A computer-implemented method of allocating resources to a hierarchy of demand priorities in a linear programming production planning system for determining a production plan, said method comprising:

aggregating, by said computing device, said demand priorities into different priority groups;

allocating, by said computing device, said resources to the highest priority group of demand priorities using a first linear programming model;

allocating, by said computing device, remaining resources to the next highest priority group of demand priorities using a second linear programming model, wherein said second linear programming model uses results from said first linear programming model; ~~and~~

~~iteratively~~ repeating said process of allocating remaining resources, by said computing device, to the remaining groups of demand priorities in order of priority using a different linear programming model for each iteration; and

outputting, by said computing device, a production plan based said processes of allocating resources.

16. (Currently Amended) The method in claim 15, wherein each different linear

programming model uses ~~results~~ a program solution of the previous linear programming model.

17. (Original) The method in claim 15, wherein during said allocating processes, each linear programming model fixes variables associated with priority groups that have a lower priority than priority group to which the resources are currently being allocated.

18. (Original) The method in claim 15, wherein during said allocating processes, each linear programming model allocates the full range of backorder costs within the priority group to which the resources are currently being allocated.

19. (Original) The method in claim 15, further comprising dividing said priority groups into different sub-priority tiers.

20. (Currently Amended) The method in claim 19, wherein said sub-priority tiers can be processed simultaneously ~~or separately~~.

21. (Currently Amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform a method of allocating resources to a hierarchy of demand priorities in a linear programming production planning system for determining a production plan, said method comprising:

aggregating said demand priorities into different priority groups;

allocating said resources to the highest priority group of demand priorities using a first linear programming model;

allocating remaining resources to the next highest priority group of demand priorities using a second linear programming model, wherein said second linear programming model uses results from said first linear programming model; and

~~iteratively~~ repeating said process of allocating remaining resources to the remaining groups of demand priorities in order of priority; and

outputting, by said computing device, a production plan based said processes of allocating resources.

22. (Original) The program storage device in claim 21, wherein when repeating said process of allocating remaining resources, said method uses a different linear programming model for each iteration.

23. (Currently Amended) The program storage device in claim 22, wherein each different linear programming model uses ~~results~~ a program solution of the previous linear programming model.

24. (Original) The program storage device in claim 21, wherein during said allocating processes, each linear programming model fixes variables associated with priority groups that have a lower priority than the priority group to which the resources are currently being allocated.

25. (Original) The program storage device in claim 21, wherein during said allocating processes, each linear programming model allocates the full range of backorder costs within the priority group to which the resources are currently being allocated.

26. (Original) The program storage device in claim 21, wherein said method further comprises dividing said priority groups into different sub-priority tiers.

27. (Currently Amended) The program storage device in claim 26, wherein said sub-priority tiers can be processed simultaneously ~~or separately~~.